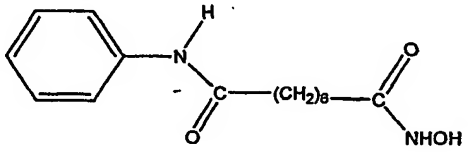
What is claimed is:

1. A method of treating mesothelioma or diffuse large B-cell lymphoma in a subject, said method comprising the step of administering to the subject an effective amount of a pharmaceutical composition comprising a histone deacetylase (HDAC) inhibitor, or a pharmaceutically acceptable salt or hydrate thereof, and a pharmaceutically acceptable carrier or diluent, wherein the amount of histone deacetylase inhibitor is effective to treat said mesothelioma or diffuse large B-cell lymphoma in said subject.

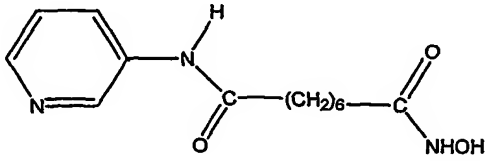
2. The method of claim 1, wherein the method is used to treat mesothelioma in said subject.

3. The method of claim 1, wherein the method is used to treat diffuse large B-cell lymphoma in said subject.

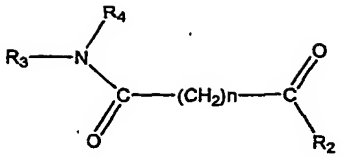
4. The method of claim 1, wherein the HDAC inhibitor is suberoylanilide hydroxamic acid (SAHA), represented by the structure:



5. The method of claim 1, wherein the HDAC inhibitor is pyroxamide, represented by the structure:

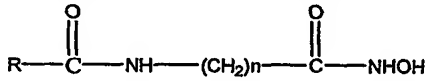


6. The method of claim 1, wherein the HDAC inhibitor is represented by the structure:



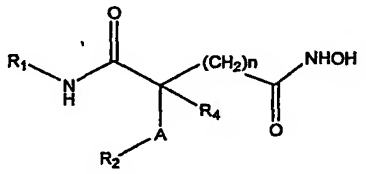
wherein R_3 and R_4 are independently a substituted or unsubstituted, branched or unbranched alkyl, alkenyl, cycloalkyl, aryl, alkyloxy, aryloxy, arylalkyloxy, or pyridine group, cycloalkyl, aryl, aryloxy, arylalkyloxy, or pyridine group, or R_3 and R_4 bond together to form a piperidine group; R_2 is a hydroxylamino group; and n is an integer from 5 to 8.

7. The method of claim 1, wherein the HDAC inhibitor is represented by the structure:



wherein R is a substituted or unsubstituted phenyl, piperidine, thiazole, 2-pyridine, 3- pyridine or 4-pyridine and n is an integer from 4 to 8.

8. The method of claim1, wherein the HDAC inhibitor is represented by the structure:



wherein A is an amide moiety, R_1 and R_2 are each selected from substituted or unsubstituted aryl, arylalkyl, naphthyl, pyridineamino, 9-purine-6-amino, thiazoleamino, aryloxy, arylalkyloxy, pyridyl, quinolinyl or isoquinolinyl; R_4 is hydrogen, a halogen, a phenyl or a cycloalkyl moiety and n is an integer from 3 to 10.

9. The method of claim 1, wherein said HDAC inhibitor is a hydroxamic acid derivative, a Short Chain Fatty Acid (SCFA), a cyclic tetrapeptide, a benzamide derivative, or an electrophilic ketone derivative.

10. The method of claim 1, wherein said HDAC inhibitor is a hydroxamic acid derivative selected from the group consisting of SAHA, Pyroxamide, CBHA, Trichostatin A (TSA), Trichostatin C, Salicylhydroxamic Acid, Azelaic

Bishydroxamic Acid (ABHA), Azelaic-1-Hydroxamate-9-Anilide (AAHA), 6-(3-Chlorophenylureido) carpoic Hydroxamic Acid (3Cl-UCHA), Oxamflatin, A-161906, Scriptaid, PXD-101, LAQ-824, CHAP, MW2796, and MW2996.

11. The method of claim 1, wherein said HDAC inhibitor is a cyclic tetrapeptide selected from the group consisting of Trapoxin A, FR901228 (FK 228 or Depsipeptide), FR225497, Apicidin, CHAP, HC-Toxin, WF27082, and Chlamydocin.

12. The method of claim 1, wherein said HDAC inhibitor is a Short Chain Fatty Acid (SCFA) selected from the group consisting of Sodium Butyrate, Isovalerate, Valerate, 4 Phenylbutyrate (4-PBA), Phenylbutyrate (PB), Propionate, Butyramide, Isobutyramide, Phenylacetate, 3-Bromopropionate, Tributyrin, Valproic Acid and Valproate.

13. The method of claim 1, wherein said HDAC inhibitor is a benzamide derivative selected from the group consisting of CI-994, MS-27-275 (MS-275) and a 3'-amino derivative of MS-27-275.

14. The method according to claim 1, wherein said HDAC inhibitor is an electrophilic ketone derivative selected from the group consisting of a trifluoromethyl ketone and an α-keto amide.

15. The method according to claim 1, wherein said HDAC inhibitor is a natural product, a psammaplin, or Depudecin.

16. The method of claim 1, wherein the pharmaceutical composition is administered orally.

17. The method of claim 16, wherein said composition is contained within a gelatin capsule.

18. The method of claim 17, wherein said carrier or diluent is microcrystalline cellulose.

19. The method of claim 18, further comprising sodium croscarmellose as a disintegrating agent.

20. The method of claim 19, further comprising magnesium stearate as a lubricant.

21. The method of claim 16, wherein said composition is administered to the subject at a total daily dosage of between about 25-4000 mg/m^2.

22. The method of claim 16, wherein said composition is administered once-daily, twice-daily, or three times-daily.

23. The method of claim 22, wherein said composition is administered once daily at a dose of about 200-600 mg.

24. The method of claim 22, wherein said composition is administered twice daily at a dose of about 200-400 mg.

25. The method of claim 22, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

26. The method of claim 25, wherein said composition is administered three to five days per week.

27. The method of claim 25, wherein said composition is administered three days a week.

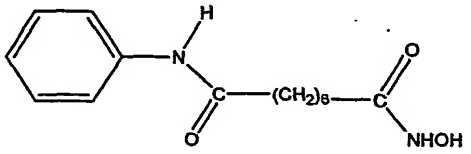
28. The method of claim 27, wherein said composition is administered at a dose of about 200 mg.

29. The method of claim 27, wherein said composition is administered at a dose of about 300 mg.

30. The method of claim 27, wherein said composition is administered at a dose of about 400 mg.

31. The method of claim 22, wherein said composition is administered three times daily at a dose of about 100-250 mg.

32. A method of treating mesothelioma or diffuse large B-cell lymphoma in a subject, said method comprising the step of administering to the subject an effective amount of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat said mesothelioma or diffuse large B-cell lymphoma in said subject.

33. The method of claim 32, wherein the method is used to treat mesothelioma in said subject.

34. The method of claim 32, wherein the method is used to treat diffuse large B-cell lymphoma in said subject.

35. The method of claim 32, wherein the pharmaceutical composition is administered orally.

36. The method of claim 35, wherein said composition is contained within a gelatin capsule.

37. The method of claim 36, wherein said carrier or diluent is microcrystalline cellulose.

38. The method of claim 37, further comprising sodium croscarmellose as a disintegrating agent.

39. The method of claim 38, further comprising magnesium stearate as a lubricant.

40. The method of claim 35, wherein said composition is administered to the subject at a total daily dosage of between about 25-4000 mg/m^2.

41. The method of claim 35, wherein said composition is administered once-daily, twice-daily, or three times-daily.

42. The method of claim 41, wherein said composition is administered once daily at a dose of about 200-600 mg.

43. The method of claim 41, wherein said composition is administered twice daily at a dose of about 200-400 mg.

44. The method of claim 41, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

45. The method of claim 44, wherein said composition is administered three to five days per week.

46. The method of claim 44, wherein said composition is administered three days a week.

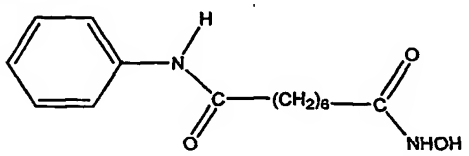
47. The method of claim 46, wherein said composition is administered at a dose of about 200 mg.

48. The method of claim 46, wherein said composition is administered at a dose of about 300 mg.

49. The method of claim 46, wherein said composition is administered at a dose of about 400 mg.

50. The method of claim 41, wherein said composition is administered three times daily at a dose of about 100-250 mg.

51. A method of treating mesothelioma or diffuse large B-cell lymphoma in a subject, said method comprising the step of administering to the subject a total daily dose of up to about 800 mg of a pharmaceutical composition comprising suberoylanilide hydroxamic acid (SAHA) or a pharmaceutically acceptable salt or hydrate thereof, represented by the structure:



and a pharmaceutically acceptable carrier or diluent, wherein the amount of SAHA is effective to treat said mesothelioma or diffuse large B-cell lymphoma in said subject.

52. The method of claim 51, wherein the method is used to treat mesothelioma in said subject.

53. The method of claim 51, wherein the method is used to treat diffuse large B-cell lymphoma in said subject.

54. The method of claim 51, wherein the pharmaceutical composition is administered orally.

55. The method of claim 54, wherein said composition is contained within a gelatin capsule.

56. The method of claim 55, wherein said carrier or diluent is microcrystalline cellulose.

57. The method of claim 56, further comprising sodium croscarmellose as a disintegrating agent.

58. The method of claim 57, further comprising magnesium stearate as a lubricant.

59. The method of claim 54, wherein said composition is administered once-daily, twice-daily, or three times-daily.

60. The method of claim 59, wherein said composition is administered once daily at a dose of about 200-600 mg.

61. The method of claim 59, wherein said composition is administered twice daily at a dose of about 200-400 mg.

62. The method of claim 59, wherein said composition is administered twice daily at a dose of about 200-400 mg intermittently.

63. The method of claim 62, wherein said composition is administered three to five days per week.

64. The method of claim 62, wherein said composition is administered three days a week.

65. The method of claim 64, wherein said composition is administered at a dose of about 200 mg.

66. The method of claim 64, wherein said composition is administered at a dose of about 300 mg.

67. The method of claim 64, wherein said composition is administered at a dose of about 400 mg.

68. The method of claim 59, wherein said composition is administered three times daily at a dose of about 100-250 mg.